

ON THE GOVERNMENT OF ELECTRONIC BILLS OF LADING

An appraisal

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ABSTRACT

This thesis assesses the situation and potential success in legal practice of one major invention in the maritime industry, namely, the electronic bill of lading by taking into consideration developments of the relevant regulatory frameworks through time by some few important institutions involved including CMI (Comité Maritime International), Bolero (Bills of Lading Electronic Registry Organisation) and UNCITRAL (United Nations Commission on International Trade Law). The thesis focuses on analysing effectiveness of the legal attempts of these actors in supporting the electronic bill to be accepted as fully legally enforceable as in the paper-based case. In doing so, emphasis is placed on the question of how fundamental legal requirements of the traditional bill can also be met by this paperless replacement. The thesis argues that the trendy bill concerned shall be regarded as the electronic equivalent of the paper bill since, based on some of the recent guidelines and provisions offered, it certainly satisfies such traditional requirements. That is, the electronic bill of lading is, too, a legal document that can be signed and capable of performing all basic traditional functions which include being a receipt for the goods, being evidence of terms in a contract of carriage and, more sophisticatedly, being a negotiable document of title. The thesis points out that the CMI model fails to stay attractive for long as it is associated with a number of problems, while the Bolero system that follows, though imperfect, appears to be a better alternative for the contracting parties wishing to use the bill of lading in electronic form. UNCITRAL not only provides essential legal guidelines like Model Laws on Electronic Commerce and on Electronic Signatures, but also is developing Draft Convention on the Carriage of Goods [Wholly or Partly] [By Sea] purporting in part to build a thorough framework governing and help promoting the use of the electronic bill of lading. This great prospect expected by many to be a dream legal solution for the electronic bill has, however, some room for improvement as suggested in the thesis.

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CHAPTER 1 – INTRODUCTION

A bill of lading is one of the most important legal documents in shipping. Contracting parties use it as a receipt for the goods, evidence of terms in a contract of carriage and a negotiable document of title to the goods. Since the time the new generic technology, i.e., Information and Communication Technology (ICT) came to play a role in a wide range of commercial activities and almost every part of our everyday life, many industrial sectors including transportations have electronically evolved. This key technology, in particular, leads to a remarkable improvement of information transfer process in the maritime industry. The development of Electronic Data Interchange (EDI) has essentially enabled transport documents to be transferrable electronically anywhere anytime; one notable example is the emergence of an electronic bill of lading.

Despite this emergence or invention long more than twenty years ago, its success remains unclear in practice, i.e., electronic bills of lading are not yet widely accepted to be used in the maritime business and, many would maintain, far from being reliable replacements for paper bills. This thesis endeavours to analyze legal obstacles to the use of electronic bills of lading by focusing on a question of how the issues have been handled by several legal frameworks, models or rules proposed by the international institutions involved since the beginning of the 1990s. This thesis argues that these attempts however are associated with a number of problems which include, e.g., lack of security in the CMI (Comité Maritime International) model, lack of publicity of the BOLERO (Bills of Lading Electronic Registry Organisation) system and inadequate provisions dealing with legal liabilities of parties under the UNCITRAL (United Nations Commission on International Trade Law) Model Laws. In addition, the thesis investigates how these problems, if any, have been dealt with or solved in the more recent years by UNCITRAL in order to evaluate the current situation of practicability of electronic bills of lading.

The rest of the thesis is structured as follows. *Chapter 2* provides some background of traditional bills of lading with emphasis on their functions. The chapter identifies problems or disadvantages of paper bills of lading, which have been widely used for many centuries, and discusses the rationales for their electronic substitutes, i.e., to facilitate

commercial transactions in the maritime industry such as to reduce costs and conform to delivery speed of goods in the modern time which are typical and crucial problems when paper bills are used. In order to explain how these paperless bills of lading may replicate traditional ones, the chapter essentially draws their legal comparisons through summarising how fundamental traditional properties can be obtained on the basis of electronic bills of lading.

Based on prior studies mostly undertaken around the millennium, *Chapter 3* raises that existing systems or rules governing the use of electronic bills of lading seem to have many problems and thus may not be sufficiently workable, at least as stand-alone solutions. The discussion focuses on two main models, namely, CMI and BOLERO that were introduced in 1990, 1999 respectively.

Chapter 4 focuses on a recent legal attempt by UNCITRAL to establish a set of uniform rules aiming at thoroughly dealing with the government of electronic bills of lading. This essential work in progress is known as UNCITRAL Draft Convention on the Carriage of Goods [Wholly or Partly] [By Sea] ('Draft Convention'). The chapter also takes accounts of two Model Laws recommended also by UNCITRAL that are, too, applicable to governing the use of electronic bills of lading. Two Model Laws, on Electronic Commerce 1996 on Electronic Signatures 2001, were designed to offer national legislators harmonized legal guidelines on the issues as well as to assist individuals in drafting contracts and resolving contractual disagreements. The chapter evaluates workability and effectiveness of these UNCITRAL attempts in helping to address the legal equivalence of electronic bills of lading *vis-à-vis* traditional ones.

Finally, *Chapter 5* concludes the thesis by discussing its main findings, giving final remarks and suggesting some further research.

CHAPTER 2 – PAPER VS. ELECTRONIC BILLS OF LADING: SOME MAIN COMPARISONS

2.1 Traditional bills of lading and their functions

Bills of lading have been widely used since the sixteenth century in carriage of goods by sea.¹ Traditionally, these transport documents were issued only in paper format to function as follows.

1) Function as a receipt for the goods

After the goods have been loaded onto the vessel, bills of lading commonly are to be produced in writing to demonstrate some major shipping details, for instance, date of receipt of shipment and description of the goods such as condition, identification, weight and quantity. These statements about the goods contained in the bill specifically are deemed of importance since they indicate how the goods shall appear to be at the port of destination.² Put differently, the statements give rise to the carrier's obligation to ensure that the goods are in the same condition with how they were received from the shipper, i.e., as stated in the bill. The bill of lading containing these statements is thus *prima facie* evidence of the goods which have been loaded onto the vessel,³ and remains conclusive evidence as long as the receiver acts in good faith.⁴

¹ H. A. Giermann (2004) *The evidentiary value of bills of lading and estoppel*, Münster: Lit, at p. 22.

² M. Dubovec (2006) 'The Problems and Possibilities for using Electronic Bills of Lading as Collateral', *Arizona Journal of International & Comparative Law*, Vol. 23 No. 2, 437 – 466, at p. 441.

³ R. Low (2000) 'Replacing the Paper Bill of Lading with an electronic Bill of Lading: Problems and Possible Solutions', *International Trade & Business Law*, Vol. 5, 159 – 271, at p. 160.

⁴ Dubovec, n. 2 above, at p. 441.

2) Function as evidence of terms in a contract of carriage of the goods

Although the bill of lading *per se* is not a contract of carriage, it is deemed evidence of terms and conditions of the contract between the carrier and the shipper.⁵ A normal order is that, after these contractual parties have agreed to have the goods shipped against the agreed payment (usually ascertained by the carrier's booking note), the contract of carriage is concluded.⁶ The bill of lading is thereafter issued to reflect the terms and conditions of the contract. Once the bill has been transferred from the shipper to the subsequent holder, no other evidence pointing to terms and conditions that differ from those contained in the bill of lading can be raised to make a challenge since those contained in the bill validly represent the complete contract of carriage between the carrier and shipper.⁷

3) Function as a negotiable document of title to the goods.

This distinct function of the bill of lading as a negotiable document of title makes it extremely important in maritime shipping. This function can be further subdivided into three as: (i) to represent the right to possess the goods; (ii) to show that the ownership of the goods has passed to the subsequent holder; and (iii) to signify security for the lender.⁸ Of these three, it can be said that the (ii) seems of outstanding essence and gains much attentions from both individuals and legal institutions involved since this sub-function constitutes great power of the bill of lading, i.e., it grants anyone who holds this original document the ownership of the goods, even before they physically reach to the port of discharge. This also means that the title of the goods can be transferred to the third party by endorsement in the paper bill of lading; making it a negotiable document.⁹ Nonetheless, the extent to which the bill of lading is transferrable would be dependent on how it has been issued. For example, in case the bill of lading has been blank endorsed or issued 'to

⁵ C. Schaal (1999) 'The 21st Birthday of the Electronic Bill of Lading: With Age Comes Maturity', *Lex E – Scripta*, Available at <http://www.inter-lawyer.com/lex-e-scripta/articles/electronic-bills-of-lading.htm> [last accessed 26 June 2008].

⁶ F. Gehrke (2001) 'New Attempts at Electronic Documentation in Transport Bolero – The end of the experiment, the beginning of the future?', LL.M. Thesis, 1 – 74, at p. 2, Available at <http://lawspace.law.uct.ac.za:8080/dspace/bitstream/2165/232/1/gehrke.pdf> [last accessed 26 June 2008].

⁷ *Leduc v Ward* (1888) 20 QBD 475.

⁸ Dubovec, n. 2 above, at p. 448.

⁹ Under the English law, however, one may argue that the bill does not always function as a negotiable document because the subsequent holder who holds the bill would not receive any better right to obtain the goods than that of the original holder. W. Payne and E. Ivamy (1989) *Carriage of Goods by Sea*, 13th Ed., London: Butterworths, at p. 91.

order' of the shipper, the bill then can be transferred by endorsement or naming a consignee. On the other hand, if the bill has been issued to a specific consignee leaving no possibility 'to order', it would then become a non-negotiable document (i.e., a sea waybill) due to its lack of transferability.¹⁰

2.2 Traditional bills of lading: Pros and Cons

Having been used for several centuries, possible advantages of the paper bill of lading over its potential electronic substitute are mainly due to its system that was well established and has been working for a very long time. This system includes norms or a set of standard routines agreed upon and used in shipping as well as institutions that govern activities involving the use of the bill, i.e., various sets of prepared standard contract clauses supported by a number of comments, case and statutory laws.¹¹ The system has long served the maritime industry to facilitate the use of the bill of lading. According to the statistics made by the Bolero,¹² for instance, contracting parties widely regard its function as a document of title without a doubt and simply accept its negotiability, e.g., having no hesitation to make a transfer of ownership of the goods by endorsing (and delivering) the bill.

However, there is enormous room for improvement consistently calling for considerable attention to make the shipping system more efficient. The use of the paper bill of lading has several disadvantages or problems that need to be solved. First, to transfer the paper bill between two points takes time and this often results in late arrival of the bill. This argument has become considerably palpable in the recent years because many operational improvements in shipping as well as technological advance in ship building and navigational equipments have led to much quicker goods transportation. While the transfer of the paper bill cannot keep up with this pace, the bill usually arrives afterwards at the

¹⁰ Gehrke, n. 6 above, at p. 3.

¹¹ One clear example for this is the uniform International Convention for the Unification of Certain Rules of Law relating to Bills of Lading 1979 ('Hague – Visby Rules') accepted and used internationally. See also *ibid.*, at p. 3.

¹² See the Bolero Business Requirements Specification, Appendix A, 24 September 1997.

port of destination.¹³ This typically is the case when there are multiple transfers of the bill of lading involved before it reaches the final destination. As a result, in case the carrier cannot wait for the arrival of the bill of lading, he/she possibly misdelivers the goods (since the receiver who shows up for the goods does not have the bill to present).¹⁴ Alternatively, the carrier may choose to wait for the bill's arrival which would unfavourably cause extra costs, e.g., demurrage fees, costs of custody and insurance of the goods and additional charges for depositories.¹⁵

Second, given the very extensive sea transportation around the globe, millions of cargoes being shipped everyday each generally requires three copies of paper bills of lading. Issuing and processing this sea of documents are extremely costly in terms of time, money and environment. Finally, the level of security of using the paper bill of lading may not be sufficient. For example, it is possible and in fact easy to produce a forged copy of the paper bill as well as to use one of the originals for the fraudulent purpose, e.g., by changing its contents.¹⁶ In addition, since bills of lading are commonly issued in a set of three for one particular shipment of the goods, one of the three original bill holders who actually is not entitled to the goods may fraudulently attempt to be the first to present the bill in hand and pick up the goods from the carrier who may not have noticed any other claims to the goods.¹⁷

2.3 Replacing paper bills of lading with electronic bills

As mentioned earlier, technological advance in the age of ICT enables substantial improvement in processing and transferring information in the shipping business. A very notable example is the EDI platform or system which has been designed to allow

¹³ Low, n. 3 above, at p. 163; See also R. Brunner (2007) Electronic transport documents and shipping practice not yet a married couple, LL.M. Thesis, 1 – 67, at p. 9, Available at <http://web.uct.ac.za/depts/shiplaw/theses/brunner.pdf> [last accessed 26 June 2008].

¹⁴ Therefore, to avoid wrong delivery, the carrier usually demands the letter of indemnity from the receiver who cannot present the bill of lading.

¹⁵ Low, n. 3 above, at p. 163; Schaal, n. 5 above.

¹⁶ Brunner, n. 13 above, at p. 9; See also Gehrke, n. 6 above, at p. 5.

¹⁷ L. D' Arcy, C. Murray, and B. Cleave (2000) *Schmitthoff's Export Trade: The Law and Practice of International Trade*, 10th Edition, London: Sweet & Maxwell, at p. 277; See also Dubovec, n. 2 above, at pp. 442 – 443.

electronic information exchange in standard formats between two or more computers or other electronic components.¹⁸ This implies that, through electronic means, one can make business transactions anywhere anytime without any physical interactions. Parties in the maritime industry also benefit from this technological innovation by replacing the traditional way of transferring information with using paperless transport documents. This includes in particular the introduction of the electronic bill of lading that is expected to in part help solving some of the aforementioned problems or disadvantages of the paper bill. First and foremost, this electronic alternative seems to effectively solve the late arrival problem simply because the transfer of the electronic bill can be done in no time through the internet or other types of computer network.¹⁹ Therefore, regardless of connections and distance between the transferor and transferee, it is quite certain that, given no technical difficulties, the latter will have received the electronic bill by the time the goods arrive at the port of destination so that he/she is able to present this important document against the discharge of the goods by the carrier. The use of the electronic bill of lading consequently helps reducing the risks of misdelivery and extra costs usually incurred in case of late arrival of the paper bill as discussed above.

Relatedly, changing to using this electronic document dramatically reduces many other relevant costs, and thus results in a more efficient business process. Since there is no or relatively little paper documentation and transfer required in this electronic case, the shipment involves simpler data editing and retrieval, and less data re-key-in, manual preparation and filing management.²⁰ These advantages lower various high costs commonly incurred when opting the traditional way including processing and transferring time as well as numerous administrative costs,²¹ not to mention how much the paper usage has created environmental problems which are utmost critical nowadays.

¹⁸ A. H. Boss and J. B. Ritter (1993) *Electronic Data Interchange Agreements*, Paris: ICC Publishing, at p. 8.

¹⁹ See also Low, n. 3 above, at pp. 167 – 168.

²⁰ E. T. Laryea (2001) 'E-Commerce in Trade: Some Solutions to the Particular Problem Facing Africa in the Digisitation Of Trade', 16th BILITA Annual Conference, 1 – 12, at p. 5.

²¹ Low, n. 3 above, at pp. 167 – 168.

To the final point made earlier on the security problem of the paper bill of lading, it can be said that, on the one hand, the electronic bill may not yet be a perfect solution since there are still problems regarding electronic security too. For example, it is also possible to create a forged copy or change the contents of the electronic bill. On the other hand, the electronic system may be considered more secured than the traditional transfer, thanks to a wide range of encryption techniques such as the application of public and private keys, which in principle are known only to the contracting parties, in transferring the electronic bill. This issue is discussed in greater detail below.

2.4 Beyond technical issues: legal obstacles to the successful replacement

The previous section explains that substituting the paper bill of lading with the electronic bill can lead to the more cost-effective and less time-consuming shipment. Nonetheless, the more crucial issue affecting the success of this electronic substitute would have to do with the questions of whether and how such a substitute can have the same legal status with that of the traditional bill.²² To assess this legal equivalence, two sets of fundamental requirements essentially have to be taken into consideration. These are the ‘general’ requirements dealing with enforceability of the bill (i.e., writing and signature requirements) and the ‘specific’ requirements concerning its important legal functions (e.g., functions as a receipt for the goods, evidence of the contract and a negotiable document of title²³).²⁴ This section identifies some legal obstacles to the success of substituting the paper bill of lading with the electronic bill arising out of the following requirements.

1) General requirements

In order for the electronic bill of lading to be legally enforceable, two general legal requirements have to be satisfied which are writing/document and signature requirements.

²² C. Zekos (1999) ‘EDI and the Contractual Role of Computerised (Electronic) Bills of Lading’, *Journal Managerial law*, Vol. 41 No. 6, 1 – 34, at p. 32.

²³ See above for the discussion of these three functions of the paper bill of lading.

²⁴ The legal requirements to be met by the electronic bill of lading may be categorized into ‘general’ and ‘specific’ requirements. While the former refers to basic issues that commonly arise when it comes to electronic commerce, the latter specifically relates to issues that only are in connection with electronic transport documents. See Brunner, n. 13 above, at p. 24.

-Writing/Document Requirement

This general requirement has to be met if any document is to be accepted as evidence in court,²⁵ meaning that a legally enforceable document is required to be done in writing.

This is an important legal issue because documents nowadays can be and are widely produced (and transferred) electronically, without physical writing. The issue thus is about whether and how electronic writing or documents, including electronic bills of lading, can be legally accepted. In fact, this issue was for a long time very debatable since one may or may not consider that electronic documents can fulfil the requirement of writing/document, based on the national law in his/her country. For example, it can be said that the electronic bill of lading may not satisfy this requirement because to be accepted as a 'document' such a thing has to be in paper form,²⁶ and legislations in many countries need the bill to be written (and signed).²⁷ On the contrary, one may consider the electronic bill of lading to be legally acceptable since, for example, the Hague – Visby Rules²⁸, the Hamburg Rules²⁹ as well as some national laws do not formally require the bill or other transport documents to be in writing.³⁰ Since this was rather inconclusive and existed as a legal obstacle to the success of the electronic bill of lading, several developments in law have been made in order to give the electronic bill the official recognition as a legally enforceable document. Many efforts essentially aiming at establishing harmonized rules for the practicability of the electronic bill have been made especially by CMI, Bolero and UNCITRAL. These efforts to uniformly govern the technological innovation of interest are discussed at length in the next chapters.

-Signature Requirement

In addition to the writing/document requirement, the bill of lading needs to be signed in order to be legally accepted. A signature has two fundamental functions which are: (i) to

²⁵ J. Livermore and K. Euarjai (1998) 'Electronic Bills of Lading and Functional Equivalence', *Journal of Information, Law and Technology*, Issue 2, at section 2.1.1.

²⁶ See more detailed discussion in P. Kalofolia (2004) 'Electronic Bills of Lading: Legal Obstacles and Solutions', *Hertfordshire Law Journal*, Vol. 2 No. 1, 45 – 54, at p. 49.

²⁷ Brunner, n. 13 above, at pp. 25 – 28.

²⁸ Hague – Visby Rules, Article III.

²⁹ United Nations Convention on the Carriage of Goods by Sea 1978 ('Hamburg Rules'), Article 1 (8).

³⁰ Kalofolia, n. 26 above, at p. 47.

represent the party's intention to be legally bound by the contents in the signed document; and (ii) to authenticate the signed document.³¹ The bill of lading essentially requires to be signed by the carrier to ensure about the contents in the bill with regard to the goods being shipped, and by the (subsequent) holders to be evidence of the transfer of title of the goods. The electronic bill also has to be signed and a signature in it shall also be able to perform the same functions with that in the paper bill. Thanks to technological advance, various techniques have been used to invent different versions of electronic signatures that are capable of carrying out the same functions with manual signatures'.³² However, the more crucial question is how to provide the equivalent legal status of signature to these electronic versions. This was for a long time a remarkable legal obstacle to the successful electronic replacement since the court may restrict the term 'signature' to the traditional manual type and thus reject the use of electronic signatures.³³ Fortunately the legal enforceability of electronic signatures has been taken into account to a greater extent in the last decade particularly by the international legal institution like UNCITRAL.³⁴ This issue is further discussed in detail in the following chapters.

2) Specific requirements

In addition, there are three specific requirements that electronic transport documents, including the electronic bill of lading, need to meet in order to be legally enforceable. These requirements refer to the issue of how the three main functions of the bill of lading (i.e., functions as a receipt for the goods, evidence of the contract and a negotiable document of title) can be legally accepted when its electronic form is used.³⁵

³¹ Livermore and Euarjai, n. 25 above, at section 2.1.3.

³² Kalofolia, n. 26 above, at p. 50.

³³ Livermore and Euarjai, n. 25 above, at section 2.1.3.

³⁴ There were also some attempts several decades ago at allowing the use of an electronic signature in the (electronic) bill of lading. For instance, Article 14 (3) of the Hamburg Rules indicated that the signature on the bill of lading may be made by electronic means; It is important to note that there are some other efforts also dealing with the practicability of an electronic signature such as the Directive 1999/93/EC of the European Parliament and of the Council of 13 December 1999 on a Community framework for electronic signatures (Electronic Signature Directive). However, only Model Law on Electronic Signatures by UNCITRAL seems to be the only worldwide legal harmonization on this issue and thus has been picked for discussion in this thesis.

³⁵ See Section 2.1 above for the discussion of three basic functions of bills of lading.

The function as a negotiable document of title is not only of greatest importance, as discussed above, but also the most difficult to replicate when using the electronic bill. This is because any negotiable document must be unique as it is to be traded as a token that can represent some specific value.³⁶ For the electronic bill of lading as well as other electronic documents to achieve this is not simple since they do not actually exist in hard form and therefore may not be able to represent as physical tokens of value. Moreover, the electronic bill of lading, again, as well as other documents can be copied with ease, so that it might be harder to ensure their uniqueness.³⁷ This line of reasoning suggests that, as not being able to *prima facie* represent and guarantee the specific value, the electronic bill may not be sufficiently good to function as a negotiable document, and this is another legal obstacle that impedes its practicability. However, various attempts have been made to circumvent this obstacle, starting from the SeaDocs project (Seaborne Trade Documentation System) which tried to initiate a system for electronic negotiation of bills of lading to the more recent ones by CMI, Bolero and UNCITRAL. To what extent these attempts have been of help is discussed in Chapter 3 and 4.

On the other side, it seems clear that the electronic bill of lading has no difficulties in performing the other two functions,³⁸ i.e., as a receipt for the goods and evidence of terms in the contract of carriage. This is because the electronic bill is operated under EDI which can also communicate information. Therefore, given that the information acknowledging receipt of the goods as well as the information about the contract has been included in the electronic bill, the electronic bill would be deemed satisfactory in terms of the two traditional functionalities.³⁹ This is in accordance with that suggested by the UNCITRAL Working Group on Electronic Data Interchange. That these two functions are possible to

³⁶ A. Nilson (1995) 'Bolero – an innovative legal concept', *Computers and Law*, Vol. 6 No. 2, at p. 17. See also discussion in Low, n. 3 above, at p. 170.

³⁷ Low, n. 3 above, at p. 170.

³⁸ *ibid*, at p. 169.

³⁹ P. Winship (1995) 'Current developments concerning the form of bills of lading – United States' in A. N. Yiannopoulos (ed), *Ocean bills of lading : traditional forms, substitutes, and EDI systems*, Hague : Kluwer, at p. 280.

be easily done on the basis of EDI as it also can transfer any information between contracting parties.⁴⁰

⁴⁰ UNCITRAL Working Group IV on Electronic Data Interchange, 'Proposal by the United Kingdom of Great Britain and Northern Ireland', A/CN.9/WG.IV/WP.66, 29th Session, at p. 3, Available at <http://www.uncitral.org/pdf/english/yearbooks/yb-1995-e/vol26-p172-175-e.pdf> [last accessed 8 August 2008].

CHAPTER 3 – EXISTING CORE LEGAL SOLUTIONS FOR ELECTRONIC BILLS OF LADING

This chapter discusses some main legal solutions for the obstacles arising from both the general and specific requirements of electronic bills of lading. As mentioned above, there have been some efforts to establish a legal framework or set of rules to raise practicability of electronic bills specifically with respect to the legal equivalence of their functions to the paper bills'. These fruitful efforts include the CMI Rules and the Bolero system discussed below.

3.1 CMI: an early attempt to offer a legal solution for electronic bills

The CMI, which has hitherto been playing a key role in the world of electronic bills of lading, made one of the first somewhat successful attempts to offer the 1990 CMI Rules for Electronic Bills of Lading ('CMI Rules') for electronic bills.⁴¹ Before alternatives like the Bolero Rules were introduced, the CMI Rules in fact received quite significant popularity during the first decade after the introduction. One reason was that, in contrast to the SeaDocs system, the CMI Rules are international, voluntary and open for anyone, i.e., contracting parties such as carriers and shippers do not need to have any subscription or to pay fees.⁴² The Rules did not replace or do not interfere other rules for the contract of carriage that also relate to the bill of lading such as the Hague – Visby Rules and the Hamburg Rules.⁴³ This makes the whole system uncomplicated in technical terms and therefore allows more users to participate in without much efforts and expenses. However, it is important to note that, since the CMI Rules are voluntary, these rules may take effect only if they are agreed upon by the parties to be applied to their transactions.

⁴¹ One could argue that the SeaDocs system in fact came first. However, this attempt was far from successful and not widely used, and thus has been excluded from the main concern of this thesis.

⁴² See also Dubovec, n. 2 above, at p. 451.

⁴³ UNCTAD (2001) 'Electronic Commerce and International Transport Services', Report by the UNCTAD secretariat, United Nations Conference on Trade and Development, TD/B/COM.3/EM.12/2, 1 – 21, at p. 4.

3.1.1 Satisfying requirements of bills of lading based on the CMI Rules

A great help of the CMI Rules is a mechanism offered to support the electronic bill of lading in fulfilling several traditional requirements pointed out in Section 2.4. Article 11 raises that electronic data is equivalent to writing,⁴⁴ i.e., unless agreed otherwise, data in electronic form that has been confirmed can be used instead of a written and signed document to evidence the contract of carriage. Although it is unlikely that this CMI provision would override relevant mandatory rules,⁴⁵ it is worth noting that CMI has shown some concern in assisting the electronic bill to legally satisfy the these general bill's requirements outlined earlier.

The CMI Rules also help the electronic bill to replicate the three specific functions of the paper bill. First, under the CMI Rules, the function of the electronic bill as a receipt for the goods seems to be of satisfaction because, similar to the traditional way, the carrier needs to issue to the shipper a receipt message containing the same information with that in the paper bill. To ensure that this function can also be effective in the electronic case, the CMI Rules regard such information to have the same representational force with that of the traditional bill.⁴⁶ Despite uncertainties in relation to the court's decision as to whether or not accept this, it would seem quite sensible and probable that the court will respect the parties' intention or agreement to apply the CMI Rules to their business, and would then allow enforceability of the CMI provisions.⁴⁷ This suggests that, with help of CMI, the function of the electronic bill of lading as a receipt of goods is deemed practicable and shall be legally accepted too.

Under the CMI Rules, the electronic bill can also perform the function as evidence of a contract of carriage of the goods. It is clear from Article 4 that a reference to the carrier's terms and conditions of carriage has to be present in the electronic bill. Moreover, Article 5 of the CMI Rules underscores this 'evidence' function of the electronic bill of lading by

⁴⁴ CMI Rules, Article 11.

⁴⁵ E. T. Laryea (2000) 'Paperless Shipping Documents: An Australian Perspective', *Tulane Maritime Law Journal*, Vol. 25 No. 1, 255 – 298, at p. 284.

⁴⁶ CMI Rules, Article 4 (d).

⁴⁷ Low, n. 3 above, at pp.173 – 177.

adding that these terms and conditions shall form part of the contract of the carriage, provided that the carrier has included a reference to such terms and contracts in the electronic bill.

Finally, the CMI Rules help to make certain that the function of the electronic bill as a negotiable document of title to the goods can be legally accepted. The use of Private Key, as discussed hereafter, has been introduced for this purpose. Leaving aside existing technical difficulties and security problems, it can be said that this idea is in fact quite sensible and seems to make the electronic bill of lading work as in the traditional way. Only difference between the CMI method and the traditional one, as discussed further below, is that the title of the goods can be transferred without the involvement of the carrier when using the paper bill of lading, while such a transfer has to be carried out through the carrier under the CMI Rules.⁴⁸

The Private Key system introduced under the CMI Rules to enable the negotiability function of the electronic bill, which seems to be the most difficult and thus most problematic among the three functions when performing without paper, is worth discussing in detail. Basically, a transfer of the electronic bill using this Private Key system begins with the carrier, upon acquiring the goods, issuing and sending the electronic bill to the shipper. According to Article 4 (b) of the CMI Rules, this electronic document shall contain the following information: (i) the shipper's name; (ii) the information about the goods described in the same way as done using the paper bill; (iii) the place and time that the goods have been received; (iv) a reference to the terms and conditions in the contract of carriage; and (v) the Private Key to be used in the subsequent transmission.⁴⁹

After the electronic bill has been received by the shipper, he/she has to confirm about this receipt back to the carrier who is consequently due to respond the shipper back again by

⁴⁸ See also *ibid*, at pp. 173 – 177.

⁴⁹ However, it should be noted that, where further information is needed, these suggested requirements can be altered and more information can be added. It is also important to stress that this stage of the process is not final, i.e., the subsequent holder is able to check and revise the electronic document (bill of lading) prior to his/her confirmation. See P. Todd (1994) 'Dematerialisation of shipping documents', *Journal of International Banking Law*, Vol. 9 No. 19, 410 – 418, at p. 413.

sending him/her the Private Key.⁵⁰ Then, the shipper becomes the holder of both the electronic bill and the Private Key, used in authentication process to protect the title of the goods from the fraud. The shipper (or any current holder) now can use this Private Key to securely communicate with the carrier in transferring to the new proposed holder the title of the goods, conforming to the 'right of control and transfer rule'.⁵¹ In doing so, the carrier, after having been notified of the shipper's (or any current holder's) intention to transfer, needs to send the information in the electronic bill⁵² to the proposed new holder who thereafter has to notify the carrier of his/her intention to accept the right of control and transfer of the goods 'within a reasonable period'.⁵³ Thereafter the carrier cancels the old Private Key, and issues and sends the new one to the proposed new holder.⁵⁴ The transfer of the title of the goods would then be completed as soon as this process is completed, and only this new holder, under Article 7 (a) of the CMI Rules, would thus have the rights to request the goods from the carrier, to assign an agent to take delivery of the goods and to transfer the title of the goods to the next proposed new holder.⁵⁵ On the supply side, the carrier needs to make sure to deliver the goods only to the person whom has been given the last valid Private Key.⁵⁶

⁵⁰ R. Kozolchik, (1992) 'The paperless letter of credit and related documents of Title', *Law and Contemporary Problem*, Vol. 55 No. 3, 39 – 101, at pp. 90 – 91.

⁵¹ CMI Rules, Article 7.

⁵² The information as referred to in Article 4 of the CMI Rules, except that for the private key.

⁵³ CMI Rules, Article 7 (b); However, Article 7 (c) provides possibility for the proposed subsequent holder to deny the right of control and transfer which can be done by: (i) simply informing the carrier about his/her denial; or (ii) ignoring the transfer of such right as it is deemed rejected if it has not been accepted within a reasonable time. If either the (i) or (ii) is the case, the current holder retains the right of control and transfer and his/her Private Key also still exists.

⁵⁴ This could be seen as a very useful scheme since it can protect the system from a fraudster who may somehow have acquired the old Private Key.

⁵⁵ Todd, n. 49 above, at p. 413.

⁵⁶ The carrier would have to be liable for misdelivery if he/she has issued identical Private Keys to the recipients. See Kozolchik, n. 50 above, at p. 91.

3.1.2 How and why are the CMI Rules not so workable?

Despite being one of the first to offer such a straightforward solution helping the electronic bill of lading to replicate the legal functions of the traditional bill, the CMI Rules have an array of disadvantages which can be summarised below.

- 1) The CMI model complicates the process of transfer of title which causes extra work and delay.⁵⁷ To transfer the title using the traditional method, the paper bill of lading can simply be transferred as a single document to the proposed new holder. On the contrary, based on the CMI Private Key system described above, the transfer of title can be done only by notifying the carrier whom, after having sent the proposed new holder the information in the electronic bill and received his/her confirmation to accept the transfer, needs to cancel the old Private Key and create a new one before sending it to the proposed new holder.
- 2) Related to point (1), criticism shall be made since the CMI Rules lay heavy responsibilities on the carrier whom is obliged to act as central registry, i.e., being in charge of cancelling, issuing and reissuing, sending and resending the Private Key (as well as the information in the bill of lading) to the current and subsequent holders. It should be emphasised that this has to be done for every single transfer of title involved in any line of shipping. Although this scheme results in certainty as the carrier always knows whom the new holder is supposed to be, it seems unfair to the carrier in practice where there often are multiple transfers of title per line shipping. In other words, the carrier's responsibilities related to only this point are already excessive, not to mention his/her liability in case of loss or damage owing to technical problems such as system failure or transaction difficulties.⁵⁸ These excessive responsibilities could easily cause mistakes, e.g., the carrier's failure to cancel the old Private Key before issuing the new one, which is indeed a severe risk.⁵⁹
- 3) The CMI Private Key system has received rather low acceptance in practice. In particular, it seems to have failed to help the CMI electronic bill of lading gaining

⁵⁷ Todd, n. 49 above, at p. 416.

⁵⁸ UNCTAD, n. 43 above, at p. 5.

⁵⁹ Low, n. 3 above, at pp.173 – 177.

recognition as being able to replicate the negotiability function of the traditional bill. This is the case in many countries where the national laws have hitherto not recognised the electronic bill operated under the CMI system as a negotiable document.⁶⁰

- 4) Leaving aside the acceptability problem of the electronic bill's negotiability function, the CMI Rules do not explicitly indicate whether and how contractual rights and liabilities may be transferred along with the bill. For instance, it is possible that only the first holder has the right to take legal action against the carrier in case of breach of delivery by the carrier,⁶¹ meaning the lower chance of the carrier to be prosecuted and unfair treatment to the subsequent holder(s). Moreover, it is not clear whether the carrier has to be liable for such breach since the allocation of liability is uncertain under the CMI Rules.⁶²
- 5) Further, as being only a contractual instrument, the CMI Rules do not allow users to simply discard any mandatory rules of applicable law.⁶³ Put differently, the CMI Rules do not have definite legal power and other mandatory rules that are relevant to the bill of lading may also or instead apply, even if the contracting parties have explicitly specified to use the CMI Rules.⁶⁴
- 6) The CMI system using only Private Key does not provide contracting parties with sufficient security. This is because this secret key can be stolen during its transmission and fraudulently used to take delivery of the goods. There is also a possibility of misuse, e.g., the shipper may by mistake include this secret information in the Receipt Message sent to the subsequent holder.⁶⁵ Encryption has been introduced to help avoiding potential problems as a result of such simplicity. Based on this technique, an encryption key unique to each transaction is used to encrypt such secret information before being sent out by the carrier, and only the

⁶⁰ Laryea, n. 45 above, at pp. 285 – 286.

⁶¹ Todd, n. 49 above, at p. 413.

⁶² Low, n. 3 above, at pp. 173 – 177.

⁶³ Brunner, n. 13 above, at p. 44.

⁶⁴ As Article 6 in the CMI Rules indicates, “The Contract of Carriage shall be subject to any international convention or national law which would have been compulsorily applicable if a paper bill of lading had been issued”. See also A. Delmedico (2003) ‘EDI Bills of Lading: Beyond Negotiability’, *Hertfordshire Law Journal*, 95 – 100, at pp. 97 – 98.

⁶⁵ Low, n. 3 above, at pp. 173 – 177.

subsequent holder who shall receive both the encrypted message and the key can obtain the original secret code.⁶⁶ Despite using this somewhat more sophisticated security control procedure, the fraud is still possible if one manages to intercept both the encrypted message and the key as both of them have to be transferred over distance. A better security solution should have been employed by the CMI model to make a safer transfer of Private Key,⁶⁷ i.e., to avoid misdelivery and fraud. Some examples of good solutions include the public-private key system,⁶⁸ or even biometric signatures.⁶⁹

3.2 Bolero: a better alternative to CMI?

With hope for the better framework governing electronic bills of lading, the Bolero system was developed and introduced around the millennium, nearly a decade after the CMI Rules came to exist. This new alternative was built with an aim at dealing with a number of obvious problems in the CMI model so as to help electronic bills of lading replacing and gaining equivalent functionalities to paper bills'.⁷⁰

⁶⁶ It would be more secure if the encryption algorithm can be specifically chosen and thus privately known between the contracting parties. However, the CMI is such an open system where the general encryption algorithm is to be used publicly. Such a unique encryption key has to be used for this reason. Todd, n. 49 above, at p. 414.

⁶⁷ Low, n. 3 above, at p. 177.

⁶⁸ One important difference that leads to this alternative solution much higher security is the requirement to use both the recipient's unique private key and the sender's public key in conjunction to decrypt the encrypted message transmitted.

⁶⁹ This has not but should have been linked to or required by CMI in order to strengthen its system security. See also G. Chandler (1998) 'Maritime Electronic Commerce for the Twenty First Century', *Tulane Maritime Law Journal*, Vol. 22 No. 2, 463 – 510, at p. 476.

⁷⁰ J. Wilson (2004) *Carriage of goods by sea*, 5th Edition, London: Pearson Education, at p. 170.

3.2.1 Background and operations of the Bolero system

After about half a decade of the project's initial development,⁷¹ Bolero Operations Ltd was established in 1998 by sizable cooperation led by the TTC (Through Transport Club) and SWIFT (Society for Worldwide Interbank Financial Transactions).⁷² A vast number of collaborators worked throughout the following project phase in particular to review the Bolero system's functions and capabilities, and eventually introduced it as a new alternative framework to the industry around the end of the third quarter of 1999 under the name 'Bolero.net'.⁷³ The main difference between this new Bolero system and the CMI model is not about their contractual approach, but their scope.⁷⁴ While the use of CMI Rules is voluntary, Bolero users need to subscribe to the system, which provides a full service package for electronic bills of lading. The Bolero service is operated under the legal framework in accordance with a contractual document called the Bolero Rulebook.⁷⁵

Basically, the Bolero system operates through the CMP (Core Message Platform) running as a secure channel that allows electronic communications among users, and the TR which is in charge of keeping track of transactional records of the electronic bill of lading.⁷⁶ Creativity is apparent in this case as Bolero exploits these components in replicating the crucial negotiability function of the traditional bill and in transferring rights and liabilities

⁷¹ The Bolero project was begun around 1994 by many collaborating partners including the European Commission and a group of traders, carriers, banks and telecommunication firms. After its critical period during the first few years of the project life, the TTC and SWIFT came to join in 1997 and played important roles affecting successful development of the project. See a discussion in E. T. Laryea (2001) 'Bolero Electronic Trade System – An Australian Perspective', *Journal of International Banking Law*, Vol. 16 No. 1, 4 – 11, at p. 5.

⁷² See an overview of Bolero on its website at <http://www.bolero.net>.

⁷³ Laryea, n. 71 above, at p. 5. See also W. Ma (2000) 'Lading Without Bills - How Good is the Bolero Bill of Lading in Australia?', *Bond Law Review*, Vol. 12 No. 2, 206 – 238, at p. 206.

⁷⁴ Laryea, n. 71 above, at p. 9.

⁷⁵ UNCTAD, n. 43 above, at p. 17.

⁷⁶ There are also plans to develop more value added applications, in addition to the TR, to support the CMP. See a discussion in Laryea, n. 71 above, at p. 5. See also R. Caplehorn (1999) 'Bolero.net -- The Global Electronic Commerce Solution for International Trade', *Journal of International Banking & Financial Law*, Vol. 14 Issue 10, 421 – 426, at p. 421.

related to the contract on the basis of the ‘novation’ and ‘attornment’ principles.⁷⁷ In this respect, after the electronic bill/contract has been transferred to the new holder (through the CMP and with the TR keeping all the essential records), a contractual mechanism works as follows: (i) the electronic bill/contract transferred is seen as a new bill/contract created between the carrier and the new holder on the same terms according to the principle of novation, and the rights and liabilities associated with the contract are also deemed transferred to the new holder;⁷⁸ (ii) the title of the goods is also deemed transferred to the new holder according to the principle of attornment, and the TR helps the carrier to acknowledge the right transferee (the new holder in this case) and thus follow his/her instructions.⁷⁹ As further discussed below, under Bolero.net, certainty is also made in technical terms by employing advanced techniques like digital signatures and encryption using a combination of public and private keys.

In short, Bolero plays three essential roles in governing and facilitating the use of electronic bills of lading as well as building trust for contracting parties using them. First, it provides a secure platform for exchanging electronic documents and information in the maritime industry worldwide. Second, it acts as an independent certification authority and trustworthy third party in relation to the use of electronic bills. Third, it has a central title registry (the TR) which handles and keeps records of various transactions that relate to electronic bills. To ensure sufficient security, information transmitted over the Bolero platform is encrypted and digitally signed.⁸⁰ Whether and how the Bolero system is a workable alternative is considered in greater detail below.

⁷⁷ To use these principles is in fact not very different from the method adopted by the CMI model where most, if not all, details in every process direct to the carrier whom seems to have excessive responsibilities, as discussed above. Instead, the Bolero system uses the TR as central registry. Laryea, n. 71 above, at p. 11.

⁷⁸ UNCTAD, n. 43 above, at p. 18.

⁷⁹ Laryea, n. 71 above, at p. 5. See also Caplehorn, n. 76 above, at pp. 423 – 424.

⁸⁰ Laryea, n. 71 above, at p. 6. See also G. Platt (1999) ‘Bolero Bill of Lading Part of Larger Package’, *The Journal of Commerce*, 1 – 4, at p. 1.

3.2.2 Replicating traditional bills of lading by Bolero: general and specific functional requirements

As outlined in the previous chapter, two general requirements which are writing/document and signature requirements need to be fulfilled by the bill of lading in order to be legally enforceable. This means that authenticity of the bill is needed, i.e., it has to be ensured that the signed bill has been unchanged since the time it was signed.⁸¹ This reason makes the two requirements greatly important whether the paper or electronic bill is employed. In the case of Bolero, the Bolero message signed with a properly verifiable digital signature is used.⁸² This message is recognised by the Bolero system to be as valid as a signed and written paper document.⁸³ Therefore the Bolero bill of lading (BBL) issued as part of the Bolero message would obviously be equivalent to the traditional bill at least in the general terms.

It is essential to give a short description of the BBL before proceeding to assess its three specific functions. The BBL consists of two entirely electronic components, which are BBL Text and Title Registry Record. While the former is simply an electronic document having a very similar appearance to that of the traditional bill, the latter is structured information kept in the TR logging transactions involved in the transfer of the BBL.⁸⁴

Three important functions, as the traditional bill's specific requirements, need to be performable by the BBL. One of which, as aforementioned, is the 'receipt' function serving as the carrier's acknowledgement of the goods received from the shipper. As pointed out in the case of the electronic bill of lading under the CMI Rules, this function is least difficult to perform, and the BBL Text simply fulfils this functional requirement since it always contains similar information, including the list of goods

⁸¹ Bolero International, Ltd (1999) 'Digital Signatures in the Bolero System', Available at <http://bolero.codecircus.co.uk/assets/31/digital%20signatures%20in%20the%20Bolero%20System1092161527.pdf> [last accessed 5 July 2008].

⁸² A digital signature is deemed properly verifiable if it can be verified by means of a public key listed in the Bolero International Certificate. See *ibid.*

⁸³ *ibid.*

⁸⁴ Bolero International, Ltd (1999) 'Legal Aspects of a Bolero Bill of Lading', Available at <http://bolero.codecircus.co.uk/assets/31/legal%20aspects%20of%20a%20bill%20of%20lading1092161487.pdf> [last accessed 5 July 2008].

received for shipment, to that in the traditional bill.⁸⁵ Secondly and relatedly, such similar information in the BBL Text also contains terms of the contract of carriage,⁸⁶ so it is clear that the BBL can carry out the second traditional bill's function as being able to evidence the contract of carriage.⁸⁷

Lastly and more sophisticatedly, the Bolero system was designed with a special purpose to make explicit that the BBL can perform the traditional bill's function as a negotiable document of title to the goods based on its quasi-negotiable instrument.⁸⁸ As mentioned earlier, the BBL is transferred through the system employing the CMP and TR, and the process flows according to the principles of novation and attornment. While the novation principle deals with transferring rights and liabilities associated with the contract,⁸⁹ the attornment principle enables the BBL to replicate the traditional bill's negotiability function by allowing the current holder's interest in the goods (the so-called 'constructive possession') to be transferrable to the subsequent holder.⁹⁰ In line with the traditional case,⁹¹ once the BBL is made negotiable by designating a 'to order party' or blank endorsing,⁹² the constructive possession can be transferred electronically through the process described below, and based on the principle of attornment, the carrier shall thus hold the goods to the respective subsequent holder.⁹³ This means that the BBL is certainly capable of performing the negotiability function. It would seem unfair then to consider the BBL to be a mere non-negotiable document, i.e., a seaway bill as this functionality in particular really does support the BBL to achieve a full legal status it deserves.

⁸⁵ Bolero Rulebook, Section 3.1 (1); See also Low, n. 3 above, at p. 180.

⁸⁶ Bolero Rulebook, Section 3.1 (1).

⁸⁷ Bolero International, n. 84 above.

⁸⁸ *ibid.*

⁸⁹ A. G. Hamid and K. M. Sein (2004) 'The Legal Implications of Electronic Bills of Lading: How Imminent is the Demise of Paper Documents', *The Journal of the Malaysian Bar*, Vol. 33 No. 3, 1 – 17, at p. 13.

⁹⁰ Bolero International, n. 84 above.

⁹¹ See above in Section 2.1 (3).

⁹² Bolero Rulebook, Section 3.3 (2).

⁹³ Bolero Rulebook, Section 3.4 (2).

This legal point is crucial and the technical transfer process of the BBL would thus require at least some brief explanation. The process starts by the current holder sending the Bolero message that includes,⁹⁴ among others, the BBL Text and transfer instructions to the CMP. The CMP then performs its tasks in the following order, acknowledging the sender the receipt, checking the Bolero message for authenticity and checking it also against the TR records. If everything appears accurate, the CMP continues the process with the endorsement of the BBL Text by adding its own digital signature to the Bolero message, sending the proposed new holder this message which is to be automatically acknowledged back upon its download,⁹⁵ and registering this record in the TR (thus voiding the transferor's title to the goods),⁹⁶ provided that the transfer has not been rejected within twenty four hours after the download.⁹⁷ The proposed new holder now becomes the current holder of the BBL as shown in the TR, i.e., the title of the goods has been transferred and, therefore, it can be said that the third traditional functional requirement is fulfilled by the BBL.

3.2.3 Evaluating the Bolero alternative: how workable is it?

Using the TR over the CMP to keep records of the transfer of the electronic bill of lading and basing on the principles of novation and attornment obviously help to manage the title of the goods as well as rights and liabilities associated with the contract of carriage. By comparison with the CMI system's operations, these bring about more security and reliability of the Bolero system and perhaps higher legal acceptability of the BBL since the Bolero's process discussed above is more clearly defined in both legal and technical terms and operated by having all transactions running safely through the control centre. In addition, the process helps reducing the carrier's responsibilities and thus assists the contracting parties to prevent mistakes, unlike that under the CMI system where the carrier

⁹⁴ The Bolero message contains several parts serving different purposes. See more details in Bolero International, Ltd (1999) 'Appendix to Bolero Rulebook Operating Procedures', at pp. 6 – 9, Available at http://www.boleroassociation.org/downloads/op_procs.pdf [last accessed 12 August 2008].

⁹⁵ After that, if requested by the current holder, a notification of this download/receipt is also sent by the CMP to him/her. See *ibid.* See also Laryea, n. 45 above, at pp. 287 – 288.

⁹⁶ The whole procedure is similar when the carrier issues the BBL to the shipper (the first holder of the BBL). See also Laryea, n. 71 above, at pp. 5 – 6.

⁹⁷ Bolero Rulebook, Section 3.5.1 (1).

has to be involved in almost every transaction related to the bill of lading. Moreover, the TR employed in the Bolero system helps avoiding misdelivery due to fraud or miscommunication by ensuring in accordance with the attornment principle that there can be only one current holder of the BBL who can have possession of the goods,⁹⁸ i.e., providing correct information to make certain that the carrier acknowledges the right transferee and thus follows his/her order. This line of reasoning also supports the negotiability of the BBL as it appears to hold the uniqueness property of the (conventional) bill of lading.⁹⁹

Advanced security of the Bolero system is very noticeable. The aforementioned CMP is the centralised platform in which all the Bolero messages transferred through have to be securely encrypted (and decrypted upon arrival at the destination) using the public key cryptography, where both individual public and private keys are used in conjunction.¹⁰⁰ The Bolero system therefore is able to ensure, at least to a greater extent than when using only Private Key as in the CMI model, that the message remains unaltered during the transfer over the CMP,¹⁰¹ and can be seen as adequately protected against fraud and misuse. Moreover, the CMP maintains high accuracy by, as explained earlier, checking all incoming messages for authenticity, verifying them with the TR and signing them digitally before their outgoing transfer.

Further, the Bolero system makes explicit about the acknowledgement procedure, avoiding a common problem in electronic commercial transactions about lack of delivery acknowledgements. With this regard, the Bolero system makes it automatic, i.e., the Bolero messages sent to the CMP and the receiver are automatically and promptly acknowledged. In the latter case, the automatic acknowledgement takes place as soon as the message has been downloaded.¹⁰² Thereafter if the receiver wishes to deny the transfer of title, Bolero demands him/her to give a notification of his/her denial within a specific

⁹⁸ As the TR explicitly indicates the only current holder, the previous holder(s) is/are no longer able to deal with the BBL that has already been transferred. See Low, n. 3 above, at p. 180; Zekos, n. 22 above, at p. 33.

⁹⁹ As argued by Low, n. 3 above, at p. 180.

¹⁰⁰ Hamid and Sein, n. 89 above, at p. 13. See also Schaal, n. 5 above.

¹⁰¹ Schaal, n. 5 above.

¹⁰² *ibid*

period of ‘twenty four hours’ after downloaded.¹⁰³ Unlike the CMI Rules that do not explicitly indicate the expiry of such a period,¹⁰⁴ the more strict procedure of Bolero seems to efficiently handle delay and communication problems that usually occur in the transfer of bills of lading.

The Bolero system nevertheless is not yet fully accepted by a number of contracting parties though it is seemingly more workable than the CMI model. It is arguable that the Bolero system is not perfect owing to the nature of the BBL’s transfer method using the TR which raises a question about the security attribute of a document of title in the case of the BBL. This is because the Bolero’s operations are neither open nor in line with the existing standard for personal property registries, where the information about the security interest is required (by many, if not most, jurisdictions) to be made available in public registries or filing systems. Due to this lack of publicity, banks cannot be certain about their rights and priority in relation to the goods since there might be other transferees or creditors outside the Bolero system who may have received the same or better property right of the goods. As a result, banks may be reluctant to accept the BBL that they may find fails to fully guarantee them the title of the goods.¹⁰⁵

Despite having argued above that in principle the BBL is really capable of functioning as a bill of lading, not just a sea waybill, it should be no surprise that many contracting parties are still in doubt as to whether the TR used in the Bolero system can really be used in practice to govern the transfer of rights and obligations associated with the contract, and whether or not the use of the BBL is really a practical solution since nonetheless, like other types of electronic bills of lading, it is in electronic form which is not yet very widely accepted by national as well as international rules to be a negotiable document of title to the goods.¹⁰⁶ In addition, due to custom and other purposes, infrastructures in many

¹⁰³ The transfer is deemed accepted otherwise. Bolero Rulebook, Section 3.5.2.

¹⁰⁴ CMI Rules, Article 7 (c) only states that a notification of the new proposed holder’s refusal of the transfer of title can be given within a ‘reasonable time’.

¹⁰⁵ Dubovec, n. 2 above, at pp. 452 – 453.

¹⁰⁶ As far as majority is concerned, one may argue that the BBL cannot be a document of title since most national laws still required such a document to be written in hard form. Allen & Overy and R. Butler (1999) ‘Bolero: International Legal Feasibility Report’, 2nd Edition, as quoted in Dubovec, n. 2 above, at p. 453; International rules governing paper bills of lading such as the International Convention for the Unification of

countries especially in developing ones do not support the use of BBL.¹⁰⁷ Combined with the fact that some contracting parties may oppose the Bolero's subscription requirement, the Bolero process once started may have to be switched over to paper at some point.¹⁰⁸ On the one hand, this possible 'switch' under Bolero can be seen as its advantage. Extra costs, delays and potential errors caused by such a switch certainly do not increase popularity of the Bolero alternative, on the other.¹⁰⁹

Despite some room for improvement, many advantageous characteristics of the Bolero system including, among others, centralisation, automation and high security make it seem a workable choice for contracting parties who wish to use electronic bills of lading, especially when compared with the CMI Rules.¹¹⁰ This is supported by the fact that Bolero has been accepted, for instance, by a big developed country like Australia to be legally practical.¹¹¹ Unlike many other countries especially neighbouring ones, Australia has been quite proactive when it comes to governing the use of paperless documents including electronic bills of lading in maritime shipping, and thus can be taken as a clear example in pointing out, though only briefly, how this issue has been handled in practice. While most of other national legislations in Asia-Pacific have been redesigned solely in general terms to facilitate electronic commerce, several Australian specific statutes have been revised and enacted to overcome legal obstacles in the use electronic bills of lading.¹¹² In particular, private contracting such as through the Bolero system can be accepted by law to be used independently or together with such specific statutes including,¹¹³ among others, SCOGA (Sea-Carriage Documents Act 1996) which is greatly consonant and compatible with the Bolero Rulebook and contains various provisions in

Certain Rules of Law relating to Bills of Lading 1924 ('Hague Rules') and the Hague – Visby Rules do not apply in the case of the BBL; See a discussion in Dubovec, n. 2 above, at p. 453.

¹⁰⁷ Wilson, n. 70 above, at p. 171.

¹⁰⁸ Switching over from the BBL to the paper bill is possible under the Bolero Rules. See Bolero Rulebook, Section 3.7.

¹⁰⁹ See also a discussion in Laryea, n. 20 above, at p. 5.

¹¹⁰ See also several important points about Bolero in UNCTAD, n. 43 above, at p. 18.

¹¹¹ See, in particular, Ma, n. 73 above, at pp. 206 – 234.

¹¹² E. T. Laryea (2005) 'Facilitating Paperless International Trade: A Survey of Law and Policy in Asia', *International Review of Law Computers and Technology*, Vol. 19 No. 2, 121 – 142, at p. 127.

¹¹³ *ibid.*, at pp. 127 – 128.

line with the principles of novation and attornment as applied in the Bolero model.¹¹⁴ This final point is to further raise the practicability of bills of lading in electronic form as there certainly exist some appreciation of the attempt by Bolero and the legal acceptability of the BBL, at least in just some part of the world.¹¹⁵

¹¹⁴ See some legal comparisons drawn in Ma, n. 73 above, at pp. 220 – 222 & 226 – 227.

¹¹⁵ See a discussion in, e.g., *ibid*, at pp. 229 – 234.

CHAPTER 4 – A LEGAL FRAMEWORK DEVELOPED BY UNCITRAL

UNCITRAL was founded by the UN General Assembly in 1966 and, since then, has been playing an important role in promoting trade worldwide as a chief driver of growth, development and living standard, through working on harmonizing and unifying international trade laws. With its expanding organizational size, UNCITRAL has been quite successful in their various undertakings which help to direct and substantially facilitate many modern rules on commercial transactions.¹¹⁶ UNCITRAL has established six Working Groups to handle a wide range of trade issues which are: (i) Procurement; (ii) International arbitration and conciliation; (iii) Transport law; (iv) Electronic Commerce; (v) Insolvency law; and (vi) Security interests, respectively.¹¹⁷ This chapter focuses mainly on a recent legal development by the third Working Group in dealing with international transport of goods, namely the Draft Convention on the Carriage of Goods [wholly or partly] [by Sea] (the ‘Draft Convention’) which is intended to have considerable impact on the government of electronic bills of lading. In addition, the chapter discusses UNCITRAL Model Laws on Electronic Commerce 1996 and on Electronic Signatures 2001 offered by Working Group IV to support the fulfilment of requirements of bills of lading by electronic bills.

4.1 Draft Convention: a legal solution we have been waiting for?

The Draft Convention as a work in progress of Working group III on Issues of Transport Law, set up in May 1998, was in fact built upon the original draft prepared by CMI.¹¹⁸

¹¹⁶ UNCITRAL consists of 60 member states from around the world, as of 25 June 2007. See UNCITRAL (2007) ‘Origin, Mandate and Composition of UNCITRAL’, Available at <http://www.uncitral.org/uncitral/en/about/origin.html> [last accessed 21 July 2008].

¹¹⁷ See UNCITRAL (2007) ‘Methods of Work’, Available at <http://www.uncitral.org/uncitral/en/about/methods.html> [last accessed 21 July 2008].

¹¹⁸ UNCITRAL requested CMI (and other organizations) to work on collecting information about laws and practices existed at the time in the area of international carriage of goods by sea. The request was made following the 29th UNCITRAL session in 1996 with the purpose to establish the uniform rules that fill the gaps left in national laws and international conventions (at the time) related to the issues about the operations of bills of lading and sea waybills as well as their relations to rights and obligations between contracting

After about three and a half years of effort, CMI submitted this Draft Instrument on Transport Law to UNCITRAL in December 2001.¹¹⁹ UNCITRAL thereafter continued to develop the CMI's original work into the Draft Convention aiming at introducing a new regime for international carriage of goods (wholly or partly) by sea that might be sufficiently workable, at least enough to replace the older rules like the Hague Rules, the Hague – Visby Rules and the Hamburg Rules.¹²⁰ In addition, the Draft Convention is expected to cover not only provisions dealing with responsibilities and liabilities of the carrier as in these older rules, but also those with regards to the use of electronic transport documents, rights to the goods, transfer of rights to the goods and delivery of the goods.¹²¹

A long development process of the Draft Convention has been going on for nearly a decade. Every year since its inception, Working Group III holds two sessions for carrying out its works at the Vienna International Centre and the United Nations in New York.¹²² Working Group III started its work with the Draft Instrument submitted by CMI at the ninth session in April 2002. The work on its 'first reading' of individual articles was done in the year after, followed by some reflections and revisions, and the second round of reading was begun at the twelfth session in October 2003.¹²³ Based on the decisions made from this Working Group's 'second reading' completed afterwards at the eighteenth session in November 2006, a more consolidated version of the Draft Convention by the UNCITRAL Secretariat was prepared, the version published as document A/CN.9/WG.III/WP.81 used for discussion in this thesis.¹²⁴

parties, and to the legal status of the entities that finance contracting parties. See CMI (2000/2001) 'The travaux préparatoires', *CMI Yearbook 2000/2001*, also Available at <http://www.comitemaritime.org/draft/draft.html> [last accessed 13 July 2008].

¹¹⁹ *ibid.*

¹²⁰ Australian Government Attorney-General's Department (2007) 'UNCITRAL – United Nations Commission on International Trade Law', Available at http://www.ag.gov.au/www/agd/agd.nsf/Page/InternationalLaw_UNCITRAL-UnitedNationsCommissiononInternationalTradeLaw [last accessed 13 July 2008].

¹²¹ Steamship Mutual (2008) 'UNCITRAL - International Carriage of Goods Wholly or Partly by Sea', Available at http://www.simsi.com/Articles/UNCITRAL_IGSummary.pdf [last accessed 13 July 2008].

¹²² See details at http://www.uncitral.org/uncitral/en/commission/working_groups/3Transport.html [last accessed 21 July 2008].

¹²³ See more details at CMI, n. 118 above.

¹²⁴ UNCITRAL Working Group III A/CN.9/WG.III/WP.81, Available at <http://daccessdds.un.org/doc/UNDOC/LTD/V07/807/35/PDF/V0780735.pdf?OpenElement> [last accessed 15 July 2008].

This section emphasises on several Articles contained in the Draft Convention that are essentially relevant to the legal position of bills of lading operated in the electronic environment. This issue is discussed below in respect of the background outlined earlier in Chapter 2 purporting to relate such Articles with the general and specific requirements of traditional bills of lading.

The provisions in the Draft Convention refer to two distinguishable types of evidence used in transporting important information between contracting parties which are ‘transport document’ and ‘electronic transport record’. While the former obviously includes the paper bill of lading,¹²⁵ the scope of the latter, defined in Article 1 (20) as information in one or multiple messages issued by electronic communication under the contract of carriage, can be said to be wide enough to cover the electronic bill of interest in this entire thesis. This is because the general technical capabilities of the electronic bill, as discussed in detail above, clearly make it able to satisfy the requirements of the electronic transport record, i.e., able to both evidence/contain the contract of carriage and evidence the receipt of the goods by the carrier, though in fact only either of these is required to be met (as set in such Article). Therefore, it should not be deemed inappropriate to make implications based on relevant Articles in the Draft Convention for the case of the electronic bill of lading.

4.1.1 Electronic transport record and general requirements of bills of lading

The Draft Convention clearly allows contracting parties to select mode of transferring shipping documents that suits their needs, i.e., either the paper transport document or electronic transport record can be used to evidence the contract of carriage and/or the

July 2008]; It is important to note that the third reading has been consequently undertaken and a newer version of the Draft Convention contained in A/CN.9/WG.III/WP.101 is currently available on the UNCITRAL website at URL: http://www.uncitral.org/uncitral/en/commission/working_groups/3Transport.html [last accessed 21 July 2008]. However, this newer version has been only recently published and, more importantly, there is no major change in this version in relation to transport documents and electronic transport records, rights of the controlling party, and transfer of rights. This thesis thus considers that the newer version is neither more complete nor better than the version used for discussion herein with regard to the government of electronic bills of lading. This indifference may also be implied from the report made by CMI. See CMI, n. 118 above.¹²⁵

The transport document is defined in Article 1 (16) of A/CN.9/WG.III/WP.81 as a document issued by the carrier under the contract of carriage that shall be able to at least either evidence/contain the contract, or evidence the receipt of the goods by the carrier under the contract. Examples of the transport document include the bill of lading and sea waybill. See F. Berlingieri (2007) ‘The Uncitral Draft convention on the Carriage of Goods (wholly or partly) (by sea)’, *Zbornik Pravnog Fakulteta u Zagrebu*, Vol. 58 No. 1 – 2, 47 – 76, at p. 61.

carrier's receipt of goods. In case 'electronic communication' is chosen,¹²⁶ the Draft Convention seems to support the electronic transport record to be recognisable as a written document.¹²⁷ This is because, as issued by electronic communication,¹²⁸ the electronic transport record is clearly accessible and usable for subsequent reference, and therefore should be regarded as something that has no different value from that of written paper documents, as provided in Article 9 of United Nations Convention on the Use of Electronic Communications in International Contracts.¹²⁹ In addition, Article 8 of the Draft Convention states in line with this argument that, unless agreed otherwise, information traditionally written on the transport document can also be kept electronically in the electronic transport record. This is perhaps the reason that most provisions in the Draft Convention also cover, mostly with clear expression, the electronic transport record when referring to the transport document; treating them as having equivalent functions or even interchangeable.¹³⁰

In order to complete its fulfilment of the general requirements of the bill of lading, the electronic bill also needs to be signed in a way that complies with the requirements outlined above in Section 2.4. The Draft Convention does show some adequate concern about this as can be seen from Article 39 (2) that requires the carrier's electronic signature to be included in the electronic transport record. Essentially, the Article seems to demand this electronic signature to act in a similar manner with a manual one by indicating that the electronic signature shall be able to identify the party who has signed the electronic transport record and to represent his/her approval of it. It can thus be implied that the electronic bill of lading under the Draft Convention does meet the signature requirement of the traditional bill.

¹²⁶ Electronic communication is defined as information created, transferred or stored by electronic, digital, optical or other similar means that can be accessible and usable for subsequent reference. A/CN.9/WG.III/WP.81, Article 1 (19).

¹²⁷ See also Footnote 15 in the A/CN.9/WG.III/WP.81.

¹²⁸ It should be noted however that the use of such electronic communication has to be agreed upon by contracting parties. A/CN.9/WG.III/WP.81, Article 3.

¹²⁹ Available at http://www.uncitral.org/pdf/english/texts/electcom/06-57452_Ebook.pdf [last accessed 27 July 2008].

¹³⁰ This principle is discussed under the equalisation approach in G. Van der Ziel (2003), 'The Legal Underpinning of E-Commerce in Maritime Transport by the UNCITRAL Draft Instrument on the Carriage of Goods by Sea', CMI Yearbook, Document 9, 260 – 271, at p. 263.

Besides this seemingly helpful concern, it is important to further mention that this electronic signature provision is quite broad, e.g., it does not specify in detail about an acceptable form of electronic signature as well as an appropriate technical method of creating it. This rather broad scope advantageously allows a range of current and future technological advances of signature to be compatible with the provision. However, it is possible that the broadness leads to less uniformity as it permits different Enacting States to adopt a variety of national rules for electronic signatures. In addition, the electronic signature provision shall be improved so as to be sufficiently comprehensive in the aspects of legal effects of electronic signatures as well as of responsibilities and liabilities of the parties. For instance, this can be done by supplementing with or adding contents similar to relevant rules recommended earlier in time by UNCITRAL in Model Law on Electronic Signatures.¹³¹

4.1.2 Electronic transport record and specific requirements: the three functions

Similarly to the CMI and Bolero Rules, the Draft Convention ensures that the electronic bill of lading replicates the first two basic functions of the traditional bill, i.e., as a receipt for the goods and as evidence of terms in a contract of carriage. Article 1 (20) states that the electronic transport record is required to be able to evidence a receipt of the goods under the contract of carriage and/or to evidence the contract itself. As mentioned above, technical capabilities of the electronic bill in general should enable it to comfortably satisfy both of these conditions. Moreover, Article 42 supports the electronic bill's function to evidence the goods received in particular since the Article substantiates that the electronic transport record used as a receipt of the goods is *prima facie* evidence of the carrier's receipt of the goods referred to in the contract particulars.¹³² The Article also emphasises that, given the transfer of the electronic transport record (or transport document) in good faith, any proof to the contrary of such evidence shall be discarded. On this point, it can be said that the Draft Convention acts even more explicitly in supporting the electronic bill of

¹³¹ These include Article 6, 8, 9 and 11 in Model Law on Electronic Signatures. The subject matter is discussed further below.

¹³² Contract particulars refer to information contained in the electronic transport record or transport document about the contract of carriage or the goods (see Article 1 (24) of A/CN.9/WG.III/WP.81). This information includes, e.g., the goods' description, leading marks, quantity, weight, order and condition and delivery details (see Article 37 (1) and 38 (2) of A/CN.9/WG.III/WP.81).

lading than the CMI and Bolero Rules do, since the provision here seems to make the paper and electronic bill so alike.

Nevertheless, the issue needs further consideration, i.e., it is necessary to also take into account efficiency of the Draft Convention in dealing with the function of the electronic bill as a negotiable document of title. This involves referring to several Articles. First, Article 1 draws a clear distinction for electronic transport records, in the same way with that for transport documents, between those that are transferable and those that are not.¹³³ Needless to say, it is obvious that electronic bills of lading in general fall under the former category,¹³⁴ which even has a ‘negotiable’ label as a prefix, since it covers electronic transport records that can indicate that the goods have been consigned to the order of the shipper or of the consignee by using terms such as ‘to order’, ‘negotiable’ or similar statements that can be regarded to have the same effect by law.¹³⁵

Second, both Article 53 (4) and 59 (2) state that once the negotiable electronic transport record has been issued, the current holder who is recognised as the controlling party may transfer the right of control to the proposed new holder by simply transferring this negotiable electronic transport record.¹³⁶ It is quite explicit that the Article allows this “right under the contract of carriage to give the carrier instructions in respect of the goods”¹³⁷, which refers to the rights to take delivery of the goods and to consign the goods to the other person as indicated in Article 52 (1), to be transferred along with the electronic transport record from one party to another. This seems to essentially underline the function of the electronic bill of lading as a negotiable document of title to the goods. In addition, if such a transfer is carried out, the Draft Convention also ensures that the negotiable electronic transport record works in the same way with the traditional bill of lading as

¹³³ A/CN.9/WG.III/WP.81, Article 1 (21) and (22).

¹³⁴ Similarly, in the traditional case, the paper bill of lading can be treated as a ‘negotiable’ transport document whereas the sea waybill may be seen as an example of typical ‘non-negotiable’ transport documents. See for instance Berlingieri, n. 125 above, at p. 61.

¹³⁵ The electronic transport record of this sort is named as “negotiable electronic transport record”, unless explicitly stated otherwise. See A/CN.9/WG.III/WP.81, Article 1 (21) (a).

¹³⁶ It is important to note that such a transfer shall be done according to the procedures set in A/CN.9/WG.III/WP.81, Article 9.

¹³⁷ This is termed as ‘right of control’ in A/CN.9/WG.III/WP.81, Article 1 (14).

Article 56 (2) demands variations to the contract of carriage as a result of the transfer to be incorporated in the negotiable electronic transport record (and digitally signed corresponding to that discussed in Section 4.1.1).

Both Article 53 (4) and 59 (2) further need the transfer of the electronic transport record to be conducted corresponding to some broad procedural requirements as stated in Article 9.¹³⁸ Despite this, the Draft Convention provides no provision or recommendation concerning a specific appropriate method of transferring the electronic transport record, which would in fact help contracting parties to find a good solution to this technical issue. Due to the absence of such assistance, the parties may have to search for alternatives purely by themselves on a case by case basis. The parties may apply the abovementioned transfer methods introduced by CMI or Bolero, or opt for other solutions not covered herein. In some cases, it is possible that the rules chosen to govern or associated with the transfer method applied turn out to be in conflict with mandatory rules of applicable national law, and thus become unenforceable (e.g., the CMI Rules). This implies that to give the parties such freedom might lead to the Draft Convention less practicality as well as less uniformity. More specific or minimal standard procedures for the transfer of electronic transport records are in fact necessary and should be supplied in the Draft Convention. Should this improvement essentially be made, it can be expected that more countries, and thus many more parties, would support using the bill of lading in the form of this electronic transport record to perform the three traditional functions.

4.2 Prior developments on Electronic Commerce and Electronic Signatures by UNCITRAL

As mentioned earlier, advance in the ICT era has enabled countless technological developments in commercial activities including Electronic Commerce as a remarkable example. To catch up with the dynamics of innovation, national and international laws need to be continuously changed or such technological developments may not be practically successful in the economic systems otherwise. UNCITRAL has been quite active and helpful in this respect. In particular, Working Group IV on Electronic

¹³⁸ See A/CN.9/WG.III/WP.81, Article 9 (1); In addition, Article 9 (2) demands these procedures to be taken note of in the contract particulars and ascertainable at all times.

Commerce has essentially had a hand in dealing with legal issues in this area through developing Model Law on Electronic Commerce and Model Law on Electronic Signatures which were adopted in 1996 and 2001 respectively by UNCITRAL. Both of these Model Laws thereafter have been widely accepted and enacted not only by those States in the developed world but also by many developing States,¹³⁹ ranging from Columbia in South America to Thailand in Asia.¹⁴⁰ This section of the thesis discusses how these two legal sets of guidelines may be used to govern and support the use of electronic bills of lading in general.

4.2.1 Model Law on Electronic Commerce

The process of formulating the Model Law normally starts with listing of existing legal obstacles to the matter of interest. Then the Model Law is set up accordingly to offer national legislators a set of harmonised rules or legal instruments to assist them in coping with such obstacles.¹⁴¹ In the case of Model Law on Electronic Commerce, it is provided to “facilitate the use of modern means of communications and storage of information”,¹⁴² by focusing on helping electronic media or data messages to achieve equivalent legal acceptance to that of paper-based written documents based on the ‘functional equivalent approach’. Under this approach, the Working Group looked at purposes and functional requirements of traditional documents, e.g., writing, signature and original, and analysed how they can also be satisfied in both technical and legal terms by electronic messages,

¹³⁹ Hyperlinks to each list of Enacting States can be found at http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce.html [last accessed 14 August 2008].

¹⁴⁰ However, it is important to point out that most of these countries adopted these Model Laws with a rather limited intention to only facilitate e-commerce in general. Neglecting the importance of electronic bills of lading, countries like Columbia and Thailand for instance seem to focus on just switching to paperless in broad terms, i.e., dealing with ‘basic’ electronic transactions on the internet or through EDI. See, e.g., N. R. Angarita (2000) ‘An Introduction to Colombian E-Commerce’, *International Lawyers Network*, Vol.1 Issue 2, 1 – 10, at p. 3, Available at http://www.ag-internet.com/push_news_one_two/newsletter.htm [last accessed 14 August 2008]; Laryea, n. 112 above, at p. 136.

¹⁴¹ A. Upcroft (1999) ‘E-Commerce: Global or Local? An Australia Case Study’, *Journal of Law and Information Science*, Vol. 10 No. 1, 113 – 141, at p. 114.

¹⁴² UNCITRAL (2007) ‘1996 – UNCITRAL Model Law on Electronic Commerce with Guide to Enactment’, Available at http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/1996Model.html [last accessed 26 July 2008].

powered by a range of modern techniques in Electronic Commerce.¹⁴³ The great effort has resulted in this Model Law supplying uniform rules for Electronic Commerce both in general and in specific areas such as carriage of goods. The following discussion on how Model Law on Electronic Commerce is relevant to the government of electronic bills of lading is based on these rules contained in several Articles of the Model law including, in particular, Article 1, 5, 6 & 7 in Part I and Article 16 & 17 in Part II which are linked to the aforementioned general and specific requirements of the bill, respectively.

-Satisfying general requirements based on Model Law on Electronic Commerce

Under the Model Law, data messages, which obviously have the scope¹⁴⁴ covering electronic bills of lading, can be given the same legal status as writing or documents. Article 6 states that this is the case if the information in such data messages can be accessed and used for subsequent reference. As discussed in Section 4.1.1, electronic bills of lading in general as issued by electronic communication also meet this requirement simply because they are accessible so as to be useable for subsequent reference. These data messages therefore shall not be deemed legally invalid and treated as legally different from physical ones solely due to the fact that they are not in physical form and their transactions are carried out electronically.¹⁴⁵ This argument is also supported by Article 5 which asserts that legal effect, validity or enforceability of such electronic information should not be discriminated just because of its paperless appearance.

With regard to the electronic bills' replication of the traditional signature requirement, Article 7 states that where a signature of a person is needed by law, data messages can also be used provided that such data messages are signed using the method that can identify the signatory and show his/her approval of the information contained therein, and that the

¹⁴³ Guide to Enactment of the UNCITRAL Model Law on Electronic Commerce (1996), paragraph 15 – 18.

¹⁴⁴ Article 2 (a) of Model Law on Electronic Commerce gives the definition of 'data message' as "information generated, sent, received or stored by electronic, optical or similar means including, but not limited to, electronic data interchange (EDI), electronic mail, telegram, telex or telecopy".

¹⁴⁵ J. Clift (1999) 'Electronic Commerce: the UNCITRAL Model Law and Electronic Equivalents to Traditional Bills of Lading', *International Business Lawyer*, Vol. 27 No. 7, 311 – 318, at p. 312.

method used is appropriately reliable.¹⁴⁶ General capabilities of different types of digital signatures using appropriate technical solutions, as described above, should be sufficient to meet what required by the Article.¹⁴⁷ Electronic bills of lading or other data messages digitally signed in accordance with Article 7 (1) (a) and (b) shall thus have the same legal validity as paper bills or other documents signed by manual signatures.¹⁴⁸

- Model Law on Electronic Commerce and specific functional requirements

This thesis takes into consideration Model Law on Electronic Commerce also in analysing whether and how electronic bills of lading satisfy the three specific functional requirements, which are: (i) function as a receipt for the goods; (ii) function as evidence of terms in a contract of carriage; and (iii) function as a negotiable document of title to the goods. This is to focus on Article 17 provided in Part II of the Model Law. Before proceeding to that, Article 16 which establishes the scope of this whole part and is an important reference for the main discussion in this subsection deserves some short description. Article 16 fundamentally lists a number of actions related to contracts of carriage of goods including, in specific, issuance of a receipt for the goods (linked to the (i)), providing notices or statements related to the performance of the contract (linked to the (ii)). More importantly, the Article covers the actions that are particularly relevant to the (iii) which are obtaining or transferring rights and obligations under the contract, and granting, obtaining or negotiating rights in the goods.

Article 17 entirely deals with electronic transport documents and essentially treats them as legally indifferent from paper-based ones, e.g., by insisting that rules or laws governing contracts of carriage written in or evidenced by paper documents shall not be deemed inapplicable to contracts of carriage in the form of or evidenced by data messages simply because they lack physical appearance.¹⁴⁹ More specifically, Article 17 (1) provides that

¹⁴⁶ In full, Article 7 (b) requires the method to be “as reliable as was appropriate for the purpose for which the data message was generated or communicated, in the light of all the circumstances, including any relevant agreement”.

¹⁴⁷ Similarly to the Draft Convention, the Model Law does not require any specific technique of signature. Pros and cons of this lack of strict requirement are discussed above in Section 4.1.1.

¹⁴⁸ The Model Law gives appropriate technical solutions the same legal effects as traditional signatures, as implied in Livermore and Euarjai, n. 25 above, at section 2.1.3.

¹⁴⁹ Model Law on Electronic Commerce, Article 17 (6).

transport documents in electronic form may be accepted by law, i.e., data messages (as argued, including electronic bills of lading) may also be used when conducting any actions listed in Article 16. These encompass, putting differently from above, using electronic bills as receipts for the goods, as evidence of terms in a contract of carriage, and as negotiable documents of title to the goods (i.e., the requirements for endorsement and transfer of possession of traditional bills can be achieved electronically¹⁵⁰). In addition, the Article provides the data message with the ‘guarantee of singularity’ if legally needed.¹⁵¹ Article 17 (3) states that, in case the law requires the right in the goods or the right or obligation under the contract to be conveyed to one person only, the data message can be used instead of the paper document in transferring the right or obligation to that person, given the reliable method used to render the data message unique.¹⁵² With a range of advanced methods discussed above, the electronic bill of lading of course can be rendered as unique as the paper bill.¹⁵³ This guarantee thus seems to particularly benefit to the use of the electronic bill, which crucially needs to achieve the traditional bill’s legal negotiability function.

Article 17 (5) complements the guarantee of singularity by adding that no paper document can also be used so as to gain the same legal effects when the data message has already been used in negotiating the rights in the goods or transferring the right or obligation under the contract.¹⁵⁴ This uniqueness assurance importantly helps reducing the risk of duplicate negotiable documents of title that are in fact common in maritime shipping. Contracting parties would thus gain more confidence in using electronic bills of lading and, especially

¹⁵⁰ Clift, n.145, at p. 314.

¹⁵¹ n. 143 above, paragraph 115.

¹⁵² The method needs to be reliable so as to ensure that “data messages purporting to convey any right or obligation of a person might not be used by, or on behalf of, that person inconsistently with any other data messages by which the right or obligation was conveyed by or on behalf of that person”, n. 143 above, paragraph 117.

¹⁵³ The method’s reliability is assessed based on circumstances and the purpose for which the right or obligation was conveyed, so that whether or not the reliability level is acceptable would not depend on the paperless characteristic of the electronic bill. See Model Law on Electronic Commerce, Article 17 (4)

¹⁵⁴ However, the replacement of the data message by the paper document may be done if the use of data message in performing the actions listed in Article 16 (f) & (g) has already been terminated.

those in less developed countries, probably be satisfied with flexibility as switching over to paper is also possible under the Model Law.¹⁵⁵

All in all, both Articles in Part II of the Model Law essentially help overcoming legal difficulties associated with the use of electronic bills of lading especially the problem of replicating the negotiability function of traditional bills. Nevertheless, one key point that the Model Law seems to neglect is the topic of allocation of liability.¹⁵⁶ If one looks carefully through each provision covered therein, one would be surprised to realize the absence of concern about this issue. In fact no single appearance of the term ‘liability’ can be found in the Model Law. This possibly leads to differences in national legislations implementing it and thus can make the government of electronic bills of lading somewhat unfair and problematic in great part because they are actually documents used and transferred cross-border in most cases.

4.2.2 Model Law on Electronic Signatures

Model Law on Electronic Signatures, built upon Article 7 of Model Law on Electronic Commerce referred to above, was adopted by UNCITRAL in July 2001 with an intention to provide better legal certainty in relation to the use of electronic signatures. In line with Model Law on Electronic Commerce, this Model Law follows the ‘functional equivalent approach’ in order to give electronic signatures the same legal status with that of traditional ones.¹⁵⁷ The Model Law was designed to cover a wide range of electronic signatures used in commercial activities.¹⁵⁸ According to Model Law on Electronic Commerce,¹⁵⁹ these ‘commercial’ activities would seem to encompass a broad array of

¹⁵⁵ The CMI Rules, the BOLERO Rules and the Draft Convention also allow this switch over to paper. See, e.g., Section 3.2.3 for the discussion on this issue.

¹⁵⁶ Low, n. 3 above, at p. 206.

¹⁵⁷ UNCITRAL (2007) ‘2001 – UNCITRAL Model Law on Electronic Signature with Guide to Enactment’, Available at http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/2001Model_signatures.html [last accessed 30 July 2008].

¹⁵⁸ However, the Model Law would not override any rule of law that may apply for consumer protection. Model Law on Electronic Signatures, Article 1.

¹⁵⁹ See the definition of ‘commercial’ given in the footnote of Article 1 of both Model Law on Electronic Commerce and on Electronic Signatures.

commercial relationships which also include what concerned in this thesis, namely, carriage of goods by sea. Therefore it should be clear that provisions in the Model Law, serving as guidelines for governing responsibilities and liabilities of the signatory and parties involved in the signature process,¹⁶⁰ are applicable to electronic signatures used in electronic bills of lading.

As can be seen from Article 3, the Model Law is based on the principle of technology neutrality and non-discrimination.¹⁶¹ By this, it allows no discrimination of electronic signature methods, and recognises legal validity of electronic signatures and certificates used for legal purposes regardless of their place of origin; helping to bring harmony to the use and government of electronic signatures. The principles of technology neutrality and non-discrimination adopted reflect quite explicitly in such an open-ended definition of electronic signature as “data in electronic form in, affixed to or logically associated with, a data message, which may be used to identify the signatory in relation to the data message and to indicate the signatory’s approval of the information contained in the data message”.¹⁶² One may argue that these principles too much widen the definition of electronic signature and it may thus cover signatures of some sorts that do not satisfy the authentication requirement, e.g., very advanced biometric signatures or digitised images of handwritten signatures.¹⁶³ However, this issue should be specifically handled by other legislations (such as, in Europe, Electronic Signatures Directive) that set out certain special security requirements to be met by such signatures. The technology neutrality and non-discrimination definition, on the one hand, enables a variety of electronic signatures to be of use but would lead to varying security levels of electronic signatures, on the other.¹⁶⁴ Evaluating this trade-off in depth is beyond the scope of this thesis and should be open to debate.

¹⁶⁰ UNCITRAL, n. 157 above.

¹⁶¹ This is explained in the Guide to Enactment of the UNCITRAL Model Law on Electronic Signatures (2001), paragraph 107. See also a discussion in I. Carr (2003) ‘UNCITRAL & Electronic Signatures: A Light Touch at Harmonisation’, *Hertfordshire Law Journal*, Vol. 1 No. 1, 14 – 25, at pp. 17 – 18.

¹⁶² Model Law on Electronic Signatures, Article 2 (a).

¹⁶³ A. Martínez-Nadal and J. L. Ferrer-Gomila (2002) ‘Comments to the UNCITRAL Model Law on Electronic Signatures’, *Lecture Notes In Computer Science*, Vol. 2433, 229 – 243, at p. 232.

¹⁶⁴ Carr, n. 161 above, at p. 20.

Leaving aside such a controversy, the Model Law maintains that its notion of electronic signature covers the important functions of handwritten signature, i.e., to legally identify the signatory and to represent his/her approval of the contents in the signed electronic document.¹⁶⁵ In this respect, Article 6 (1) ensures the equivalent legal effects for electronic signatures by stating that the requirement of a signature of a person can be met by a ‘reliable’ electronic signature when an electronic message is used.¹⁶⁶ Article 6 (3) shows a special concern regarding the reliability level of electronic signatures by establishing that: (i) the signature creation data shall be linked to the signatory only;¹⁶⁷ (ii) at the time of signing, the signature creation data shall be under the control of the signatory only; (iii) any change to the electronic signature after the time of signing shall be detectable; and (iv) any change to the contents in the signed electronic document after the time of signing shall be detectable in case the integrity of the contents is required by law. Since these rather technical issues would nevertheless depend considerably on mechanisms and technologies available to be chosen by the signatory,¹⁶⁸ Article 7 leaves the Enacting States a possibility to set their specific criteria for a reliable electronic signature that meet recognised international standards.¹⁶⁹

Besides helping to ensure that electronic bills of lading satisfy the signature requirement of traditional bills, the Model Law essentially makes it quite clear about allocation of responsibilities of the signatory and parties involved which include the creation service provider who is the third party issuing the certificate¹⁷⁰ and providing other services in connection with the electronic signature, and the party whose actions rely on the certificate

¹⁶⁵ Martínez-Nadal and Ferrer-Gomila, n. 163 above, at p. 232.

¹⁶⁶ Model Law on Electronic Signatures, Article 6 (1) demands the electronic signature used to be “as reliable as was appropriate for the purpose for which the data message was generated or communicated, in the light of all the circumstances, including any relevant agreement.”

¹⁶⁷ Signature creation data refers to secret keys or codes used in the electronic signature creation process to provide a secure link between the signatory and resulting electronic signature, n. 161 above, paragraph 97.

¹⁶⁸ *ibid*, paragraph 119 – 123. See also Carr, n. 161 above, at pp. 20 – 21.

¹⁶⁹ See Model Law on Electronic Signatures, Article 7.

¹⁷⁰ The certificate is used to substantiate the link between the signatory and signature creation data. Model Law on Electronic Signatures, Article 2 (b).

or electronic signature.¹⁷¹ Responsibilities of each actor in the creation and use of legally effective electronic signature are explicitly set out in Article 8, 9 and 11. However, it is worth pointing out that the Model Law provides no clear provision about legal consequences in case of failure to act consistently with their responsibilities laid down in these Articles.¹⁷² In legal practice, these consequences can be either civil or criminal liabilities such as in the form of fines or damages, and the Model Law leaves it to be governed by national laws of the Enacting States. Legal uncertainty is a possible outcome of this.¹⁷³ One may be surprised to be subject to unexpected penalties imposed by a foreign jurisdiction as a result of lacking uniform rules for such legal consequences.

¹⁷¹ Model Law on Electronic Signatures, Article 2 (d) (e) (f).

¹⁷² These Articles only provide that the actor failing to do so has to be liable for any applicable legal consequences. The Articles do not specify what kind of liabilities or legal consequences.

¹⁷³ As raised in Carr, n. 161 above, at p. 23.

CHAPTER 5 – MAJOR FINDINGS AND CONCLUDING REMARKS

This thesis focuses on one of the most important and debateable issues in the present in carriage of goods by sea, namely, the government of electronic bills of lading. In particular, the thesis looks at how fundamental requirements of traditional bills may also be met by their electronic substitutes based on several legal frameworks and guidelines developed in the past few decades by the legal institutions involved, i.e., CMI, Bolero and UNCITRAL. These requirements can be classified into two broad groups which are the general requirements including writing/document and signature requirements, and specific requirements including three essential functions: (i) as a receipt for the goods; (ii) as evidence of terms and conditions in a contract of carriage; and (iii) as a negotiable document of title to the goods. The thesis points out that achieving the (iii) seems most difficult and much space herein is therefore devoted to discussing the attempts of the relevant institutions at handling this issue so as to facilitate the use of electronic bills of lading.

The CMI Rules were the first endeavour that gained some degree of success in helping to establish legal recognition of electronic bills. This thesis shows that while the voluntary nature of the CMI model in part had increased the use of electronic bills particularly throughout the decade after its inception, the CMI model *per se* has too many disadvantages, e.g., lack of provision concerning the transfer of contractual rights and liabilities in relation to the electronic bill transferred, rather low security as using mere Private Key, lack of legal enforceability in case relevant mandatory rules apply. Combined with the introduction of the Bolero system that followed around the end of the last century, CMI dramatically lost its reputation and is nowadays rarely accepted as a workable option for contracting parties who wish to use electronic bills.

The Bolero alternative regulatory framework has, to a great extent, brought back attractiveness of the use of electronic bills and confidence of not-so-conservative contracting parties. Bolero has been playing its important role in the maritime industry through offering a full service package for contracting parties using electronic bills and, in

specific, giving solutions to the CMI's problems. The principles of novation and attornment applied under the centralised Bolero system employing the CMP and TR can be said to certainly help dealing with issues in transferring rights and obligations under the contract of carriage as well as negotiability of the electronic bill. The present study raises that the well-designed Bolero system is especially important to the latter issue, i.e., constituting the BBL's negotiability function, which crucially contributes to support the electronic bill as being legally equivalent to the traditional bill. Besides essentially assisting the electronic bill in replicating all the traditional functions, the combinative use of the CMP and TR is helpful greatly in reducing the carrier's responsibilities, which apparently is one of the main difficulties under the CMI model, and solving various problems in maritime shipping such as wrong delivery and other miscommunication problems. Advanced security of the Bolero platform through the use of public key cryptography also remarkably elevates contracting parties' confidence in using the bill of lading in electronic form. The Bolero system has therefore been accepted by a leading nation like Australia, as mentioned above, to be legally practical. However, to use and be governed by Bolero one needs to have subscribed to it. This close system not only limits the range of the use of electronic bills, but also often fails to ascertain the bank or other third parties involved about the BBL's security attribute as this lack of publicity is inconsistent with the existing standard for personal property registries.

It is widely expected that the Draft Convention being developed by another key actor like UNCITRAL would fill the gap in governing the use of electronic bills of lading. This thesis argues that this work in progress has a great potential to be a workable uniform law which would strengthen the practicality of electronic bills in the Enacting States. Various remarkable advantages of the Draft Convention are due to the provisions that are specifically concerned with legal acceptance of bills of lading used in the form of electronic transport records, legal transferability of the right of control using negotiable electronic transport records and allocation of responsibilities and liabilities of contracting parties. Nevertheless, there is still some room for improvement. For instance, one imperfect point that deserves special attention in the view of the author is lack of provision or recommendation for a suitable transfer method of such electronic transport records. Given time that still remains and resources that are ample, optimistically, UNCITRAL should be able to develop this Draft Convention into a uniform law that is sufficiently

comprehensive and workable so as to promote and effectively govern the use electronic bills of lading in the Enacting States.

In addition, the thesis takes into consideration two Model Laws offered by UNCITRAL to serve as guidelines for handling issues related to the use of electronic bills. First, Model Law on Electronic Signatures deals exclusively with legal validity and non-discrimination use of electronic signatures, which are importantly linked to the reliable method of signing electronic bills and the question of whether properly signed electronic bills satisfy the signature requirement of traditional bills. Second, Model Law on Electronic Commerce recommends a range of rules that can be applied to help governing contracting parties in using electronic bills. These essentially cover the issues related to both the general and specific requirements of bills of lading such as the guarantee of singularity which, in line with the principles of novation and attornment applied by Bolero, supports the negotiability function of electronic bills by ensuring that only the holder of the electronic bill embraces the right in the goods as well as other rights under the contract. In general, these two Model Laws are well accepted by a number of States and, as pointed out above, have been widely adopted by those in either developed or developing categories purporting to, though only in some cases, promote and support the use of electronic bills and, in most cases (perhaps all developing ones), facilitate electronic commerce more broadly.

UNCITRAL seems to, overall, have done a good job so far in helping electronic bills to replace traditional ones, which could not keep up with the pace of technology in maritime shipping. Nonetheless, it is important to note that in the meantime none of these UNCITRAL's efforts has full legal effects. While the two Model Laws are only legal guidelines that national legislators in each State are free to choose whether or not to enact and, in case of enactment, whether to do so fully or partially, the Draft Convention is still under the process of development and has not yet been formally approved and adopted. One would hope that the Draft Convention that has the potential to be the best available solution will soon come into force so as to harmoniously govern electronic bills of lading either independently or in conjunction with relevant Model Laws and other rules like Bolero. On the other side, more contracting parties would be convinced to switch to paperless as soon as most of the legal obstacles identified can be eliminated.

Finally, it is important to point out limitations in this study as well as some suggestions for further research. Of particular essence is to mention that the thesis does not cover every regulation or legal guideline that may also be relevant to electronic bills of lading.

Examples include those that apply in Europe like Electronic Commerce Directive¹⁷⁴ and Electronic Signatures Directive which contain many provisions similar to those in the two Model Laws concerned, but are more limited in terms of scale of application. A narrow scope of this thesis may also be criticised. Indeed, it would be interesting to go beyond legal issues in the use electronic bills of lading, e.g., by linking them to the topic of formation of electronic contracts that is considerably relevant in both legal and technical terms. Moreover, possible extension of this line of research can be made by analysing comparatively legal practicability of the use of electronic bills based on different legal frameworks and guidelines enacted in different countries (for instance, comparing the situation in developed countries with that in developing ones). Once the Draft Convention is complete and successfully adopted, we would also expect to see some studies looking at its success in practice (or lack of such) in different parts of the world.

¹⁷⁴ Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market.

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